Dechloromonas: to be or not to be a PAO? That is the question!

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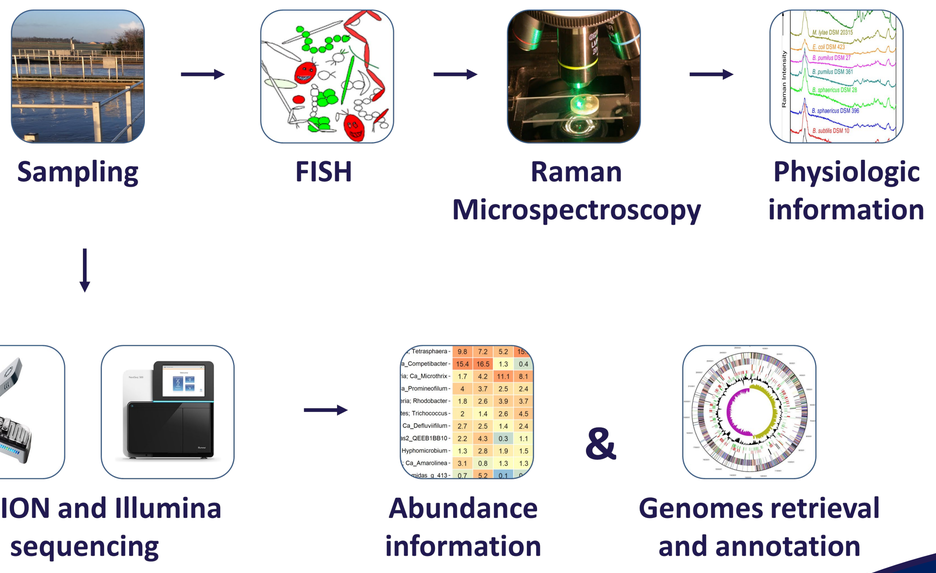
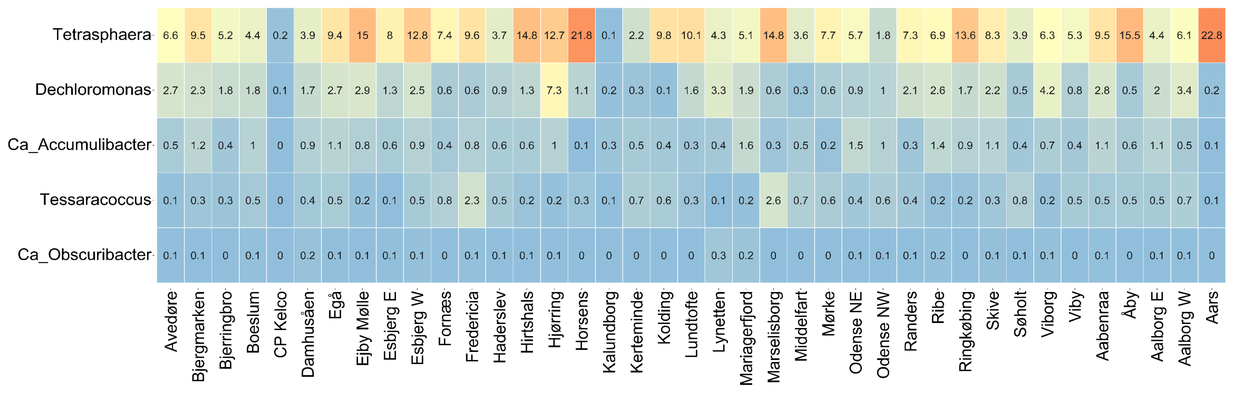
Francesca Petriglieri, Caitlin Singleton, Miriam Gomez, Jette. F. Petersen, Marta Nierychlo, Per. H. Nielsen
Center for Microbial Communities, Aalborg University, Denmark

Background and Methods

EBPR (Enhanced Biological Phosphorus Removal) is a biotechnological process that relies on the ability of certain microorganisms, called **PAO** (polyphosphate accumulating organisms), to store phosphate intracellularly. Members of the genus ***Dechloromonas*** are often abundant in EBPR plants worldwide and have long been considered putative PAOs, as **intracellular poly-P** has been identified with traditional staining methods. The **aim of this study** was to determine its metabolic potential, to verify it and define the levels and dynamics of important storage polymers using **metagenomics** and **FISH-Raman** microspectroscopy.

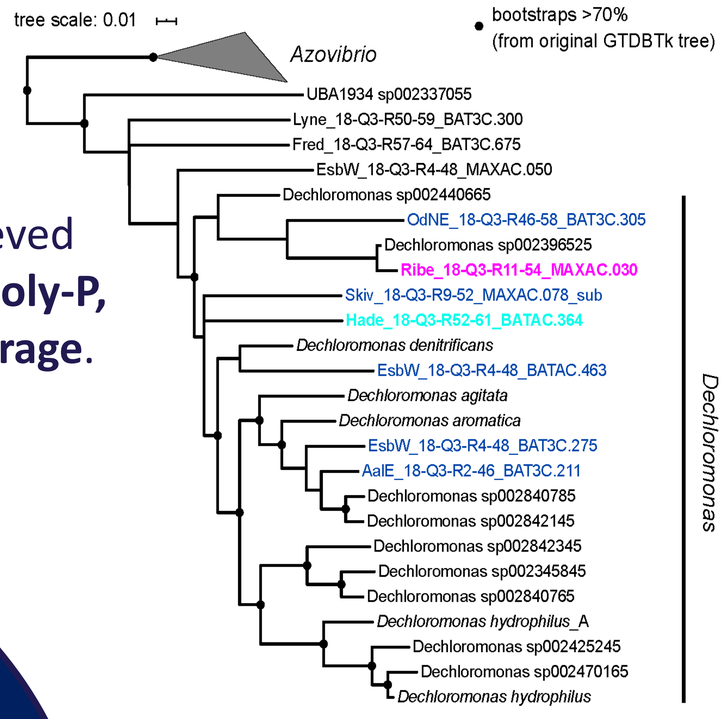


Abundance and metabolic potential



Dechloromonas is the **second** most abundant PAO in Danish plants, reaching up to **40%** of the biomass.

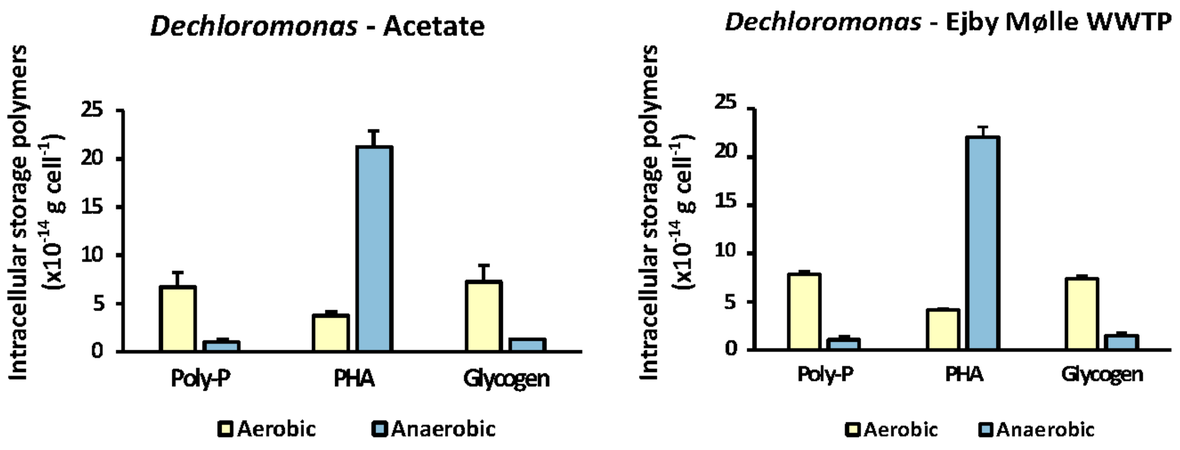
The 7 genomes retrieved showed potential for **poly-P, PHA and glycogen storage**.



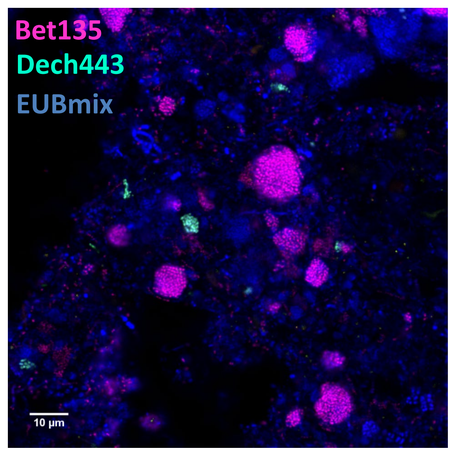
NOW WE KNOW IT! *Dechloromonas* is an important PAO in full-scale EBPR WWTPs .

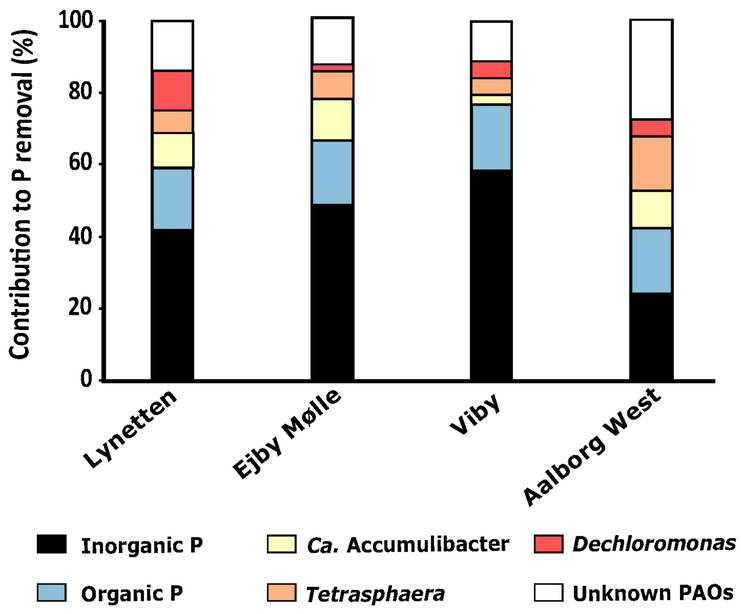
Dechloromonas in lab-scale P release experiments

The presence and dynamic behaviour of intracellular storage polymers was confirmed by **FISH-Raman** in ***Dechloromonas* cells** during P-release experiments, with mixed biomass from lab-enrichment and full-scale sludge.



Dechloromonas in full-scale WWTPs





The genus *Dechloromonas* plays an **important role** in **P removal** in full-scale EBPR plants .

fp@bio.aau.dk
@PHNLab
Environmental Biotechnology
Aalborg University